DELAWARE CENTER FOR THE INLAND BAYS

# Inland Bays Journal

SUMMER 2019

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The Inland Bays Journal is a publication of the Delaware Center for the Inland Bays. The CIB is a nonprofit organization and a National Estuary Program. The purpose of the Inland Bays Journal is to educate and inform citizens and visitors to the Inland Bays watershed about this "estuary of national significance."

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**inlandbays.org**
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# Terrapins on the Move

*By Katie Young, Communications Specialist*

By mid-May, Route 1 through coastal Delaware is brimming with people. Locals are coming out of their winter hibernation, snowbirds are returning to their summer homes, and visitors are cruising in for sunny summer vacations. Coastal Delaware is an incredible place: from the exciting shops and amusements to the natural environment with its verdant maritime forests, lush wetland grasses, and relaxing waters.

But living below all of our human hustle and bustle, much smaller creatures are also taking to the highway: our resident diamondback terrapins. Diamondback terrapins are aquatic turtles that dwell in the brackish tidal waters and marshes of our Inland Bays watershed.

In the Inland Bays watershed specifically, their habitat stretches from Rehoboth Beach in the north to Fenwick Island and the Maryland state line in the south. The Inland Bays on the western side of Route 1 are where our resident terrapins spend most of their time. On the other side of this highway, however, sit the sandy dunes that line the Atlantic Ocean —the perfect nesting area for a diamondback terrapin.

It's a sad take on the classic joke: "Why did the turtle cross the road?" Terrapins evolved long before our highways carved up the landscape and their instincts have not changed, urging them to move from our brackish bays

*continued on page 6*

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# THE CONNECTION Between Trees *and* Your Health

I've been in love with trees since I was a kid. No joke. I actually taped a "love poem" high up on the trunk of the American holly where I grew up in New Castle. I guess I needed to express my appreciation for the hours of climbing it gave me and for how it fed the birds with its berries every winter. This act of devotion wasn't without danger and, of course, my big brother teased me ruthlessly for it.

But now my brother, like most people, gets it. Trees are essential to our well being. They fill our lungs with oxygen, they suck carbon out of the atmosphere, they absorb stormwater, and together as forests, they provide clean drinking water to our aquifers. And in the Inland Bays watershed, an area with serious drinking water quality problems due to nitrates, showing love for trees is not potentially embarrassing, it's essential for our health.

Traveling around the watershed, you can't miss the remarkable replacement of forests with houses. I won't mince words, the situation is serious for runoff and water quality. ***To turn this around we need your help in two ways.***

**FIRST**, this year Sussex County Council will likely consider strengthening its requirements for forested buffers between new developments and waterways. Nowhere do trees do more good than near water. Please communicate early and often about how you value forests and the water quality they protect!

**SECOND**, plant native trees yourself. It's personally rewarding and a gift of health to future generations! And if you don't have the opportunity at your home, you can help us.

**WITH YOUR SUPPORT, THE CENTER HAS PLANTED 87,225 SEEDLINGS AND SAPLINGS ON 109 ACRES OVER THE PAST 5 YEARS.**

Every acre we plant keeps 17 pounds of nutrient pollution out of drinking water aquifers and the Bays annually. The trees we've planted in the last 5 years will capture 153 million pounds of carbon dioxide over the next 20 years.

At my home in Ocean View, I have an American holly transplanted from the old family farm near Dover. Just like the holly where I grew up, it feeds the birds every winter. And now both the tree and my daughter are at the age where they are ready for some climbing. My hope is that she inherits the love of trees and passes it on to the generation after hers.

Sincerely,

Chris Bason
Executive Director

Printed on recycled paper, including 10% post-consumer content.

(CIB): DE Inland Bays

(James Farm): James Farm Ecological Preserve

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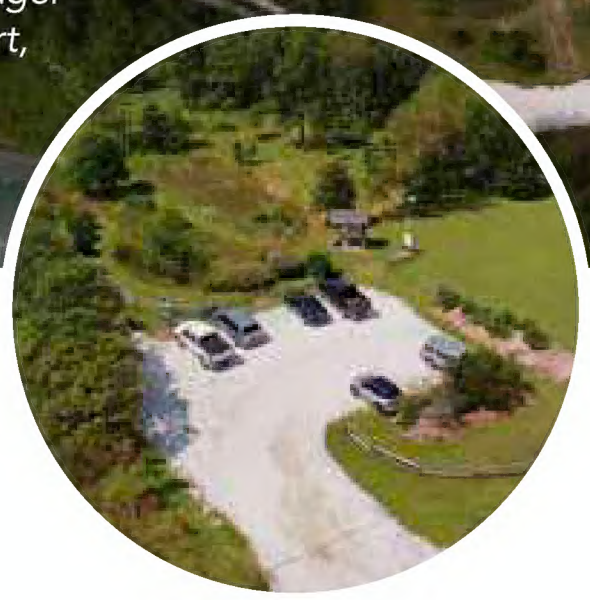
# Implementing the James Farm Master Plan: *It Takes a Village*

*By Bob Collins, Program Manager and Anna Short, Fundraiser*



*Above: The completed gateway area has 27 parking spaces and a dedicated bus drop off for students*

*Left: The old gateway which only accommodated 8 cars*

Owned by Sussex County and managed by the Delaware Center for the Inland Bays, the James Farm Ecological Preserve is a 150-acre oasis of natural habitat located near Ocean View, Delaware. The land was donated to Sussex County by the late Mary Lighthipe on the condition that it be preserved and used for educational and recreational activities. Today, the Preserve is the focal point of the Center's education efforts and provides free outdoor recreation to thousands of visitors every year.

In 2014, the James Farm Master Plan was developed to guide improvements allowing for safer access and an improved natural experience for an increasing number of visitors and environmental education students. Because of the support of several important partners, the implementation of the Master Plan is coming to fruition after four years of raising funds to complete design and construction.

The Center's progress on this project would not be possible without the generous in-kind donors who provided goods and services: site work from Bunting and Murray Construction Corporation; compost from Perdue AgriRecycle; electrical supplies from Denney Electric; electrical installation and expertise from Coastal Services LLC; and trenching services from Sposato Landscaping. These local businesses stepping up to help really says something about how important the Preserve is to our community!

Our primary contractor, Gateway Construction Company of Hartley, Delaware, has provided excellent workmanship and has kept construction on schedule despite an unusually wet winter. As of this writing, sidewalks, cobblestone curbing, and a clam-shell driveway have been installed. New trailheads, an expanded parking lot and native landscaping are completed. All of these components will provide a stunning gateway to the unique estuarine experience that is the James Farm--and that's just Phase One!

Phase Two of the James Farm Master Plan implementation, which will enter the Design, Engineering, and Permitting subphase this fall, focuses on improved education and maintenance facilities, trail realignment and maintenance that address ecological and human stressors, updated and expanded interpretive signage, and permanent restroom facilities. These components will allow the Center to better educate local youth and the public about the importance of environmental conservation in Sussex County while protecting the Preserve so that it may provide meaningful natural experiences for generations to come.

*(Left to Right) Former Councilman George Cole, Board Chair Susie Ball, Executive Director Chris Bason, CIB staff Bob Collins, Sussex County Administrator Todd Lawson, Representative Ron Gray, and Sussex County Engineer Hans Medlarz*

**If the James Farm Ecological Preserve is important to you, please consider making a contribution to the Center earmarked for the James Farm Master Plan implementation. For more information and to make a donation, visit inlandbays.org/masterplan or call 302-226-8105 x 102.**

The Center would also like to thank the following donors for their support of the James Farm Master Plan:

Susie Ball & Susan Delaney
Carl M. Freeman Companies
Carl M. Freeman Foundation
Outdoor Recreation Parks and Trails Program
Dewey Beach Lions Club
First State Resource and Development Council
Gannett Foundation
Gallery One
Amy Ginsburg
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Senator Gerald Hocker
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Lord Baltimore Women's Club
Sussex County Council
Ellen Vassallo
Kate Vassallo and Public Consulting Group
Judith Wetzel

*In Memory of John C. Bennett:*
Nancy Brumbley
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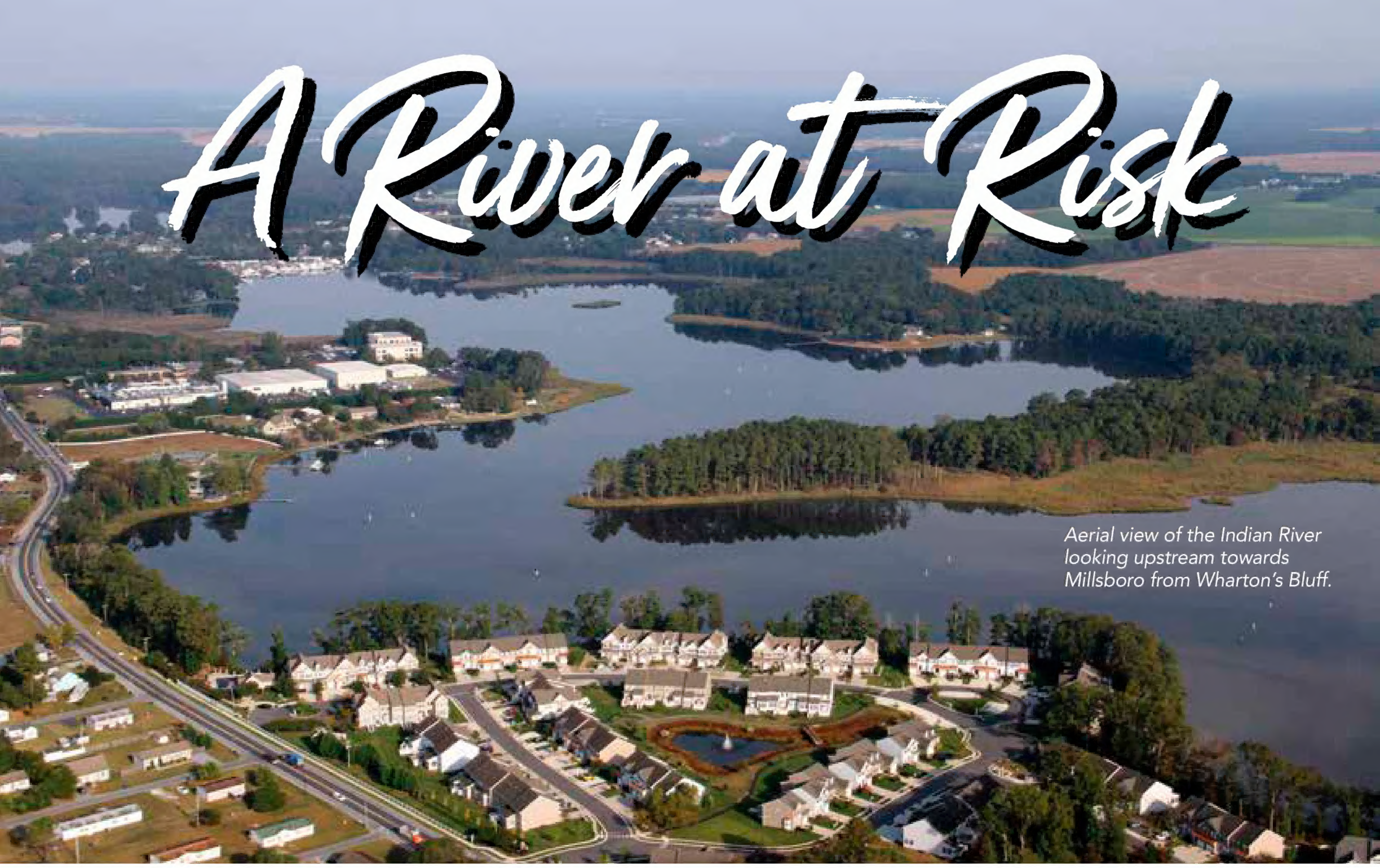
Susan Wingate
Gawthrop Greenwood
Law Offices of D. Stephen Parsons

# A River at Risk



*Aerial view of the Indian River looking upstream towards Millsboro from Wharton's Bluff.*

*By Dr. Marianne Walch, Science & Restoration Coordinator*

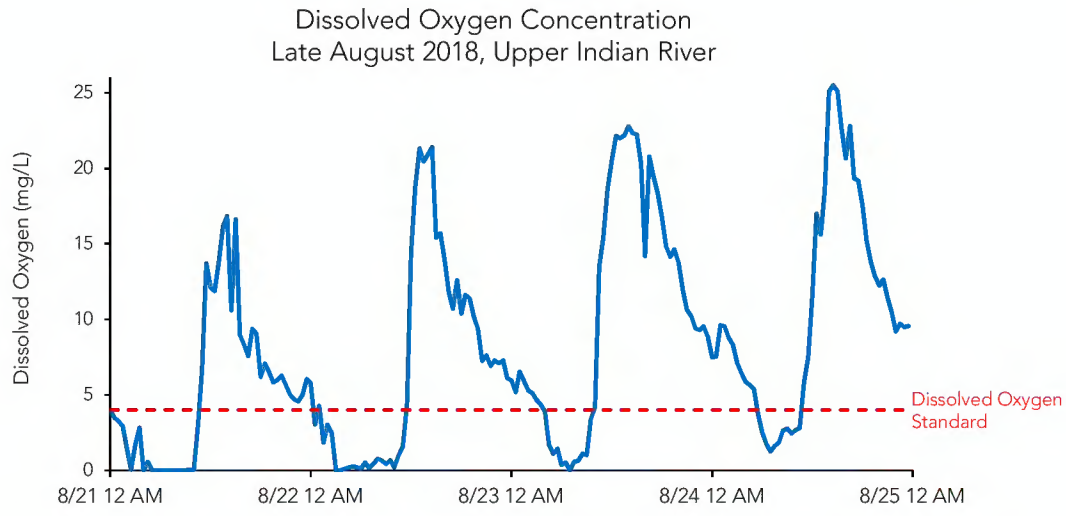
## The Indian River—six miles of tidal estuary stretching westward from Indian River Bay to Millsboro—is one of Delaware's most significant natural resources.

The shallow, productive waters, tidal flats, and wetlands support the highest numbers and diversity of juvenile fishes in the Inland Bays. Young blue crabs, flounder, and menhaden are abundant and support an important recreational fishery. The river has been designated by the State of Delaware as Waters of Exceptional Recreational or Ecological Significance, which accords them a special level of protection and monitoring.

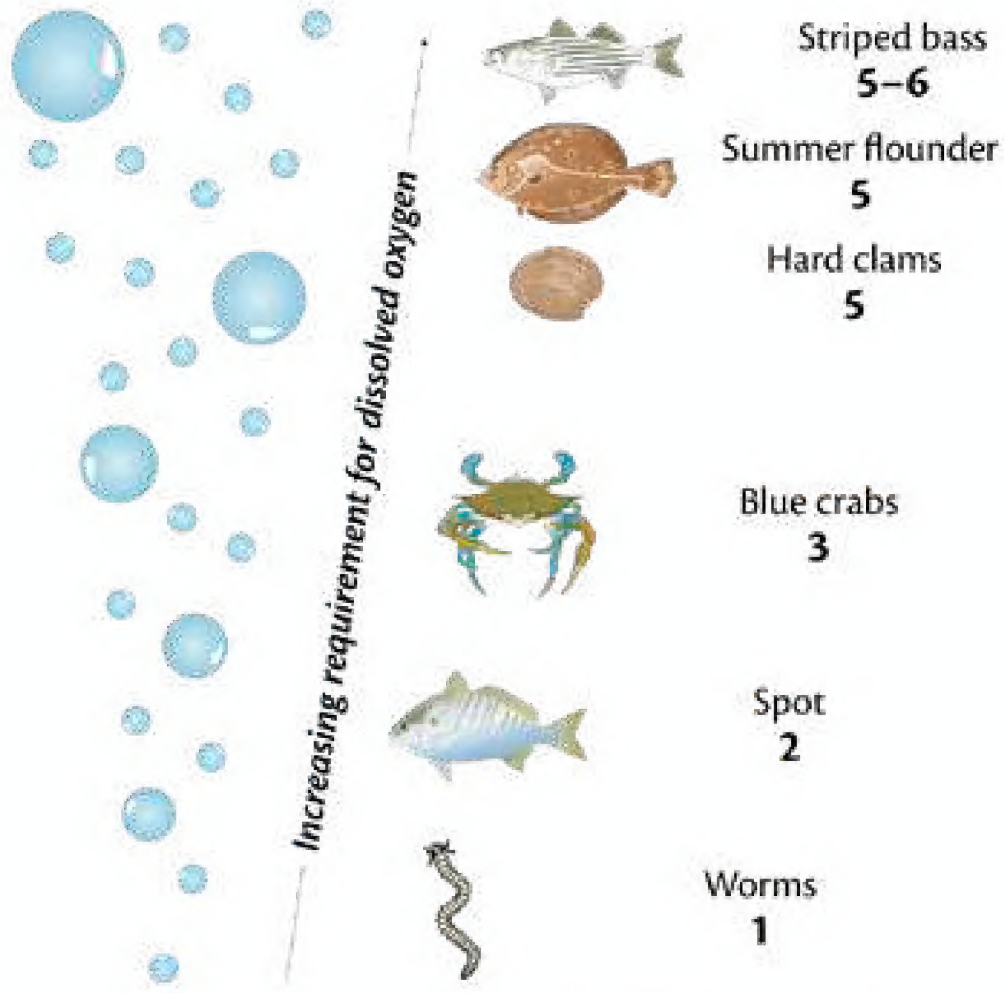
The state of the Indian River, however, is not good. The Center's *2016 State of the Delaware Inland Bays* reported that inputs of nitrogen and phosphorus pollution to the Indian River and Bay consistently far exceed healthy limits. The nitrogen level of the upper river is over twice the healthy limit, and phosphorus exceeds healthy limits by at least 40%. Despite more than 20 years of regulations designed to reduce pollution in the river, levels of nutrient pollution are not decreasing.

These excess nutrients fuel blooms of microscopic algae that reduce water clarity, prevent baygrasses from growing, and cause periods of very low oxygen. Dense algal blooms caused large areas of cloudy brown water (known as "mahogany tides") in the Indian River in late summer of 2018. Scattered fish and blue crab kills also were confirmed.

Scientists from the Center and Delaware Department of Natural Resources and Environmental Control's (DNREC) Environmental Laboratory deployed instruments in the upper Indian River last summer and fall that measured dissolved oxygen every 30 minutes over several months. Oxygen levels in shallow bay waters naturally vary throughout the day as aquatic plants and algae use sunlight to produce oxygen during the day, and some of this oxygen is used up at night. Algal blooms fueled by nutrient pollution, however, can cause these cycles to become extreme. Our monitoring data showed that in late August, during the mahogany tides, nighttime oxygen concentrations near the river bottom fell to nearly zero for hours at a time, conditions that harm or kill fish and shellfish.



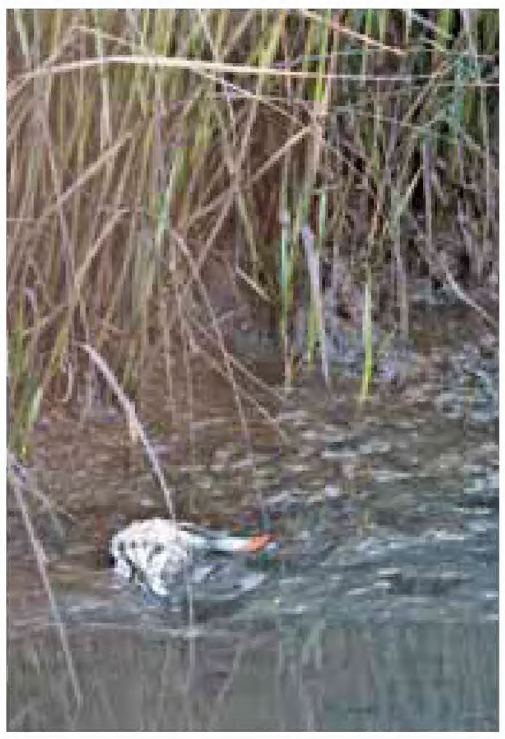

*Nutrient pollution causes oxygen levels to decrease and fluctuate wildly, leading to unsustainable conditions for many fish, shellfish, and crabs.*




*Different organisms require different levels of dissolved oxygen in the water to survive. Diagram courtesy of Integration and Application Network, University of Maryland.*

Unless nutrient inputs to the Indian River are significantly decreased with bold action, low oxygen concentrations will continue to impact one of the most productive tributaries of the Inland Bays. Clean water is essential to the crabs and fish that live in the Bays, as well as the anglers and boaters who catch them, but Delaware faces an annual deficit of $100 million to address water quality needs. The opportunity to become a national leader by proactively ensuring a sustainable source of financing for clean water projects is a critical part of a solution to this problem. The fish, the crabs, our coastal economy, and our quality of life depend upon it.

*Scientists deploying instrument for continuous monitoring of water quality in the upper Indian River near Wharton's Bluff.*



*Dead blue crabs were reported in the upper Indian River last summer, such as these spotted in the marshes of Swann Creek in July.*

# *New* Board Members FIELD GUIDE

## BOARD MEMBER
## Ken Sigvardson
*Board Elected Director*

**HABITAT:** Ocean View, DE

**IDENTIFICATION:** The Sigvardson species is rarely found in the United States with only eight known specimens. This particular variety has been known to mate for life and can often be found with its partner near the water, enjoying local cuisine. Has recently adapted from life as a professional scientist and is now commonly seen traveling quite some distance from its natural habitat as well as operating an object known as a drone.

## BOARD MEMBER
## Aimee Isaac
*Board Elected Director*

**HABITAT:** Lewes, DE

**IDENTIFICATION:** Migrated to the region from Montgomery County, MD. Often spotted with one to three offspring in tow and exhibits a distinct interest in the young of the genus as evidenced by a past career in teaching. More recently, can primarily be found advocating for various causes including Clean Water for Delaware, Alzheimer's services and research funding, and civic engagement. Seems drawn to the outdoors, having been known to roam area beaches and forested areas.

*(Oysters continued from page 1)*

to visit the ocean dunes each spring and summer. Yet we continue to build homes and businesses near the water, paving roads, and destroying vital bayside habitat.

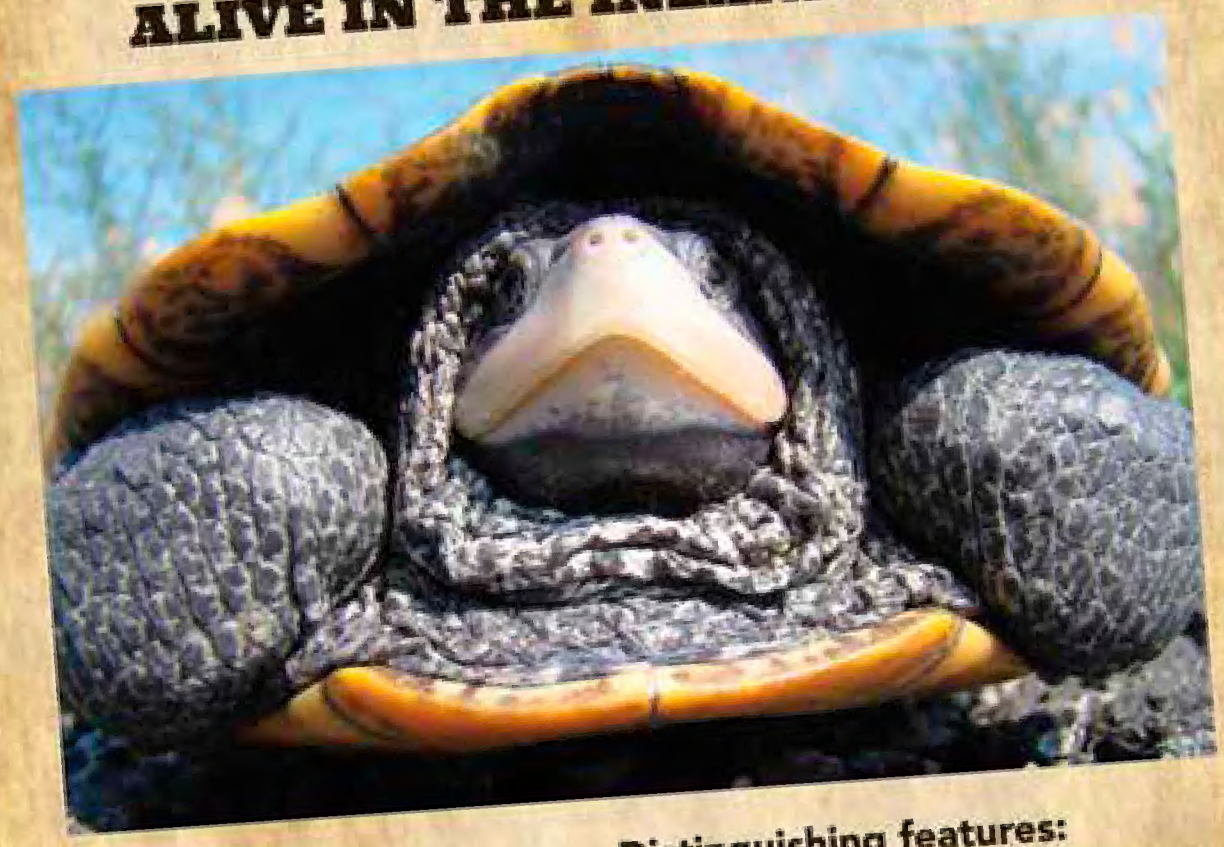
As a result, terrapins are killed each year crossing Route 1. Compounding the problem, the terrapins killed on the highway are breeding females that have the potential to reproduce for two decades. This affects the population in a major way: for every female Diamondback terrapin killed, the population also feels the loss of her unrealized offspring.

**BUT THERE IS GOOD NEWS! Over the years, we've become increasingly aware of the problem. As many locals and long-time visitors can attest, the number of terrapin casualties along this stretch of highway have declined.**

*Diamondback terrapin fence with attached silt fabric*
*Photo courtesy of Delaware Seashore State Park*

# WANTED

## ALIVE IN THE INLAND BAYS



**Name:**
Diamondback terrapin

**Alias:**
Malaclemys terrapin

**Length:**
Up to 9 inches long

**Last Seen:**
Brackish tidal waters and marshes of the U.S, from Massachusetts toTexas.

**Distinguishing features:**
A shell with diamond pattern on top and a yellow underside.

Gray skin with black spots.

A small horned beak. Sometimes disguised with a "moustache" mark above the mouth.

Webbed feet with long claws.

**Not considered armed or dangerous.**

**Please keep this individual away from the road and close to our Inland Bays.**

Not only are drivers beginning to watch out for terrapins on the road, the Delaware Department of Natural Resources and Environmental Control (DNREC) now maintains a small fence that stretches along much of Coastal highway on the north side of the Indian River Inlet Bridge. This fence both prevents terrapins from crossing the dangerous highway and forces most of them to make use of the sandy nesting areas on the edges of the Inland Bays.

Ultimately, protecting the Inland Bay's population of diamondback terrapins means that we humans have more work to do.

Waterfront property owners can protect terrapin habitats by choosing a living shoreline instead of relying on riprap and bulkheading to stabilize the shoreline. They can also support wider buffers of natural vegetation to be required between development and wetlands via county ordinance. These actions help to create and maintain a healthy natural shoreline area for turtles.

And last, but certainly not least, we can make a point to remain alert while driving on Route 1 between Dewey Beach and Fenwick Island from mid-May through late July. And if you come across a turtle attempting to cross the road — and you're in a safe position to do so — gently pick the terrapin up by the sides. While she may squirm and kick, you should be able to easily place her on the bay side of the highway, behind the turtle fencing.

# Don't *Chuck* Your *Shucks!*

*By Victoria Spice, Restoration Project Manager*

*Clockwise from top left: A shell recycling partner at Henlopen City Oyster House, another DCYS participating restaurant; Start the journey of the oyster by sipping and slurping at participating DCYS restaurants; Center Science Coordinator, Marianne Walch, enjoying oysters from DCYS Participating Restaurant Blue Coast in Bethany; Once bagged, these shells make their way back into the bay in the form of a Living Shoreline; Oyster Master hard at work sorting shell for corporate and volunteer groups at bagging events*

The Don't Chuck Your Shucks program is more than staff member Dave Ritondo's "Dirty Job," it's an opportunity for everyone to get involved. From the contractor installing the shell bags, to Center staff coordinating project partners, corporate and volunteer groups participating in bagging events, and finally servers at local restaurants delivering oysters right to your table, YOU start the process with a single slurp.

Restaurants such as Dogfish Head's Chesapeake and Maine see shell recycling as an opportunity to "be a part of local initiatives that help better our community and environment", says Manager Justine Leaman. The cleaner the Bays, the better business is for the local area. Tourism within our watershed is long sun-filled boat days, catching fish, quiet sunset kayak tours and even the modest wildlife viewing from a porch. The economic vibrancy of our area directly links to the health and beauty of our waterways and the wildlife they support.

The Center partners with more than two dozen restaurants within the Inland Bays watershed that participate in the Don't Chuck Your Shucks shell recycling program.

**These restaurants divert over 125 tons of shell from entering the waste stream each year, that's about 4,000 bushels.**

In turn, this shell is cured, bagged and put back into the Inland Bays in a number of restorative projects such as living shorelines, oyster reefs, and the oyster gardens.

In traditional recycling campaigns you associate the bright green triangle with reducing waste and contributing to a larger effort to better the environment. Today, recycling is everywhere, even where you least expect! Each time you order oysters, be sure to ask if they participate in our Don't Chuck Your Shucks recycling program. If they don't, encourage them to do so and explain the benefits. The health of our bays depends on it!

Is your mouth watering for an oyster? To visit a participating Don't Chuck Your Shucks restaurant check out our list at inlandbays.org/projects-and-issues/all/dont-chuck-your-shucks

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## CIB MISSION

*To preserve, protect and restore Delaware's Inland Bays and their watershed.*

# BECOME AN OYSTER GARDENER!

We need water-front homeowners to grow oysters* that will be used in projects that support restoration efforts in the Inland Bays!

Oysters can filter up to 50 gallons of water daily and help to create habitat for beneficial creatures like fish and crabs! Once they reach maturity, these oysters will be used in projects that benefit the Bays!

**Gear and oysters will be available in July!**
**To volunteer, email oysters@inlandbays.org**
**or call (302) 226-8105 x 111**

**More details are available at www.inlandbays.org**

**Oyster gardening oysters are not intended or safe for human consumption*